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ABSTRACT

To keep pace with changing skills, today's industrial workers are in need of three distinct kinds of competencies: vocational, technical, and multifunctional. France has chosen to focus on technical skills and upgrade the level of vocational education. All three skills are necessary to production, and no one is more important than the other. This is also true of the profiles of the workers applying them. Three such profiles can be defined according to the predominant skills used: multifunctional, technical, and vocational. According to current business practices, firms use different types of recruitment to correspond to these three profiles. As demonstrated by developments in the 1980s, the French educational system has a considerable capacity for modernization, but it is also marked by the primacy of general education over technical and occupational training. The French academic system favors the spread of scientific and technical skills and takes an increasing distance from the teaching of vocational skills, which are assuming less and less importance in the curriculum and the exam system alike. The first of two possible scenarios presumes the primacy of the technical profile. Such a trend runs the risk of overcrowding technical training tracks with a certain deskilling of graduates. The second scenario presumes vocational education attuned to the diversity and complementarity of worker skills; a whole range of jobs is viewed as a continuum. (13 references) (YLB)

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TRAINING & EMPLOYMENT

FRENCH DIMENSIONS

A NEWSLETTER FROM CEREQ AND ITS ASSOCIATED CENTRES

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Meeting the Challenge of Training Skilled Workers: French Strategies

To keep pace with changing skills, today's industrial workers are in need of three distinct kinds of competences: vocational, technical and multifunctional. In focussing on technical skills and opting to upgrade the level of vocational education, has France made the right decision ?

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THE tertiarisation of the economy, advances in new technologies and transformations in the organisation of work represent a challenge for vocational training everywhere. Certain countries, such as Germany, have been able to adapt to these changes by modifying existing training programmes [Silvestre 1986]. France, meanwhile, has opted for major structural reforms: the creation of a new vocational diploma, the "vocational" baccalauréat, and the establishment of the goal that, by the year 2000, 80 percent of a given age group should reach the baccalauréat level.

In fact, the meaning of this reform is somewhat ambiguous. Does the vocational baccalauréat define a new type of technician situated between the worker and the senior technician? Or does it establish a new profile for tomorrow's worker? The issue has not been addressed directly in this form, but it has emerged, indirectly, through the debate surrounding

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the future of the traditional degrees for skilled workers, the CAP and BEP, which still constitute the basis of worker qualification in collective agreements [Jobert and Tallard 1991]. [1]

There are two schools of thought on the question. The first holds that from now on, the new image of the skilled worker is the vocational baccalauréat holder (Level IV training), which thus invalidates traditional workers' degrees (Level V). Associated with "low qualification levels", the latter would now be suitable only for traditional activities. For the second school of thought, however, the CAP and BEP remain the standard degrees for the skilled worker, whilst the vocational baccalauréat would correspond to a new profile for the technician.

This second point of view underlies the recent report on the so-called Level-V question [Tanguy 1991a], from which the material that follows has been drawn. [2] Rather than equating change solely with level of training, it is our intention to consider the different ways that workers' skills evolve.

THREE WORKER PROFILES

A SURVEY of recent research on changing qualifications in manufacturing highlights three kinds of transferable skills:

- **Vocational skills**
  These are required by a situation that simultaneously involves a large number of variables and/or relations among highly uncertain variables. Mastery of such a work process requires technical and practical knowledge that must be co-ordinated largely through an inductive approach.

- **Technical skills**
  These correspond to general know-how derived from science and technology. They are applicable to work situations that obey relatively stable and predictable parameters.

- **Multifunctional skills**
  These are necessary for carrying out activities with distinct aims (fabrication, quality control, maintenance). They are not the same as polyvalence, which entails diversified activity within a single function.

[1] CAP (Certificat d'aptitude professionnelle) = Vocational Aptitude Certificate
BEP (Brevet d'enseignement professionnel) = Vocational Studies Diploma
These two diplomas can be obtained after two years of vocational education, following nine years of general education. They correspond to Level V in the French classification of educational levels. The new vocational baccalaureat requires two more years of vocational education after the BEP. Like the more traditional baccalaureat, it corresponds to Level IV.

[2] This report was commissioned by the Technical Education Office of the Ministry of Education, Youth and Sports. CEREQ was a major contributor to its preparation.

All three kinds of skills are necessary to production, and no one is more important than the other. This is also true of the profiles of the workers applying them. Three such profiles can be defined according to the predominant skills invoked.

▮ *Predominantly Multifunctional*

This profile, tied to the automation of previously unskilled jobs, is found among automated machine operators. It entails a combination of several functions that were previously separated: machine operation, quality control, often basic maintenance and sometimes ordering of supplies. The multifunctionality may first affect a team rather than an individual. It is often associated with "just-in-time" organisation (inspired by Japanese methods) aimed at the maximum utilisation of machines, pursuit of quality, and reduction of stocks and delivery delays. The integration of previously separate functions should help to reach these aims through better planning of start-ups, anticipation of operations and continuous production activity.

Taken individually, none of the operations is particularly complicated; the complexity arises from their functional combination. Competence corresponds above all to general aptitudes (diagnosis, problem-solving, planning of activity), the capacity to situate oneself within the context and to translate a code on a console into its concrete meaning for the process, the product or the machine.

This kind of job is found today in many industries, including intermediate goods (food processing, and the less complex work of metallurgy, chemicals, glass and paper) as well as automobiles and mass-produced household or capital goods. The activities involved include packaging, assembly and basic transformation of raw materials.

▮ *Predominantly Technical*

This profile also arises from the development of automation, but in this case it is applied to previously skilled jobs (fabrication and maintenance). Automation and the growing complexity of equipment lead to increased technical requirements, but the greatest change stems from the possibility of modelling part of the work. This modelling is possible when stable relations between the parameters characterising the work activity can be identified, as is the case for machining and certain electric-electronic activities. The operator's own interventions are reduced because they are basically carried out by a machine which is programmed to that end. The potential development of modelling is also tied, however, to economic considerations (scale of production) and choices of organisation.

Despite the increasingly technical nature of the activity that results, occupational know-how is still needed: the quality of the goods produced and the optimal use of the equipment depend on it. The cost of breakdowns and technical errors is much higher than with traditional machines. The prevailing image of automation tends to neglect this permanent need for occupational know-how, but it can easily be

demonstrated, for example, in the cases of programme revision, changing frames of reference (increasing variability of products) and unforeseen situations and mishaps.

The increased degree of abstraction required by this new kind of work also tends to be overestimated: what is needed is not so much abstraction for its own sake as the continuous passage from symbol to reality (the industrial diagram represents an old form of symbolising the real) [Merchiers 1990].

▮ *Predominantly Vocational*

This profile is the legacy of the trade-worker's tradition, although this is less lively and respected in France than elsewhere, apparently because of the late development of the working class [Sellier 1984]. It is found in activities that are complex because of the number of variables they involve and/or the uncertain nature of relations among them. The vocational skills required are all the more important because of the high degree of worker autonomy and variable nature of the situations. This complexity affects the learning process in two ways:

- The necessary preparation for these activities cannot be provided solely in an academic situation. Some of it must be acquired on the job and throughout working life;
- Technical and theoretical know-how are absolutely complementary. The amount of time needed to acquire vocational know-how is not easily reduced, unlike technical know-how, which can be acquired like general education.[3] This is why, in contrast to activities that can be partially modelled, a higher level of technical skills does not permit a reduction in the time needed to acquire vocational skills.

Among the many jobs falling in this category are those of boiler maker, pipe fitter, welder, founder, cutting or pressing tool mechanic, fitter and mechanical fitter; construction worker (with the exception of complicated industrial installations such as electricity or air conditioning, which come under technical workers); and traditional activities such as maintenance mechanic for industrial vehicles or automobiles and wood-worker.

▮ *Recruitment Practices*

According to current business practices, the following types of recruitment correspond to these three profiles:

The multifunctional profile encounters very varied situations according to labour markets and firms. This may mean the promotion of workers who previously had few skills, or the recruitment of CAP- or BEP-holders, but also general baccalauréat holders. The limited extent of the strictly occupational know-how required means that the specific area of training is unimportant. In any case, the firm provides training and/or adaptation.

The technical profile corresponds to a range of jobs for skilled workers, technicians and supervisors, for which the firms can recruit both CAP/BEP-holders and those with higher levels of technical training (vocational baccalauréat, technician diploma).

In the case of the vocational profile, CAP- and BEP-holders are recruited, but the employers' organisations insist on a long period of specialised instruction that cannot be reduced because of a higher level of general education.[4]

THE LOGIC OF TRAINING: LEVEL OR DIVERSITY?

As demonstrated by developments in the 1980s, the French educational system has a considerable capacity for modernisation. But it is also marked by the primacy of general education over technical and occupational training [Tanguy 1991b]. The latter suffer from the view that general and scientific knowledge is superior to technical knowledge, which is in turn superior to occupational know-how.

This conception has a certain number of practical implications:

- All forms of knowledge are ranked according to a single standard; i.e., unlike other countries, France makes no distinction between general education on the one hand and technical and occupational instruction on the other;
- As a result, advancement in the level of vocational training is inseparable from an increase in the level of general training;
- Conversely, a longer period of general education is held to authorise a reduction in the length of vocational instruction (cf. the shift from the 3- to 2-year CAP).

In reality, all of these different elements stem from the basic idea that the "how", more generally called "know-how", is automatically derived from knowledge. Thus it can easily be imagined that in the context of a dramatic rise in the costs of vocational instruction (owing to higher equipment costs), the French academic system favours the spread of scientific and technical skills and takes an increasing distance from the teaching of vocational skills, which are assuming less and less importance in the curricula and the exam system alike. The development of in-house training courses, or even apprenticeships, are not by themselves likely to alter this situation.

Nor is this issue limited to industrial work. It applies more broadly to France's backwardness in the area

[3] Vocational training for the CAP and BEP was generally shortened by one year. The explanation given was that the level of general training had been increased by two years (four years of high school rather than two).

[4] The reduction of vocational training for the CAP and BEP has drawn sharp protest from certain employers' organisations.

of process engineering, in contrast to its uncontestable advance on the level of theoretical research. The limited attention paid to vocational skills by the French educational system weighs down any meaningful changes in the organisation of work and limits its possibilities of greater flexibility. The preponderance of academic criteria in the selection of young people contributes to the long-term exclusion of a number of them from the labour market without providing any real guarantee of economic performance. It is far from certain that this situation permits the best use of automated equipment; in fact, this would require a high degree of cooperation, whilst the primacy accorded to the training of technicians is likely to reinforce the hierarchical nature of the organisation of work.

The gap between production workers and highly skilled personnel trained as technicians may well increase in spite of the fact that studies have already pointed to France's handicap in this domain: "Frequent breakdowns, flip-flops in programming and poor use of equipment [all] result from underestimating worker know-how" [Berry 1988].

TWO POSSIBLE SCENARIOS

▮ *Primacy of the Technical Profile, with Danger of Exclusion*

Such a trend runs the risk of overcrowding technical training tracks (i.e., the vocational baccalauréat), with a certain deskilling of graduates. Not only might these graduates find themselves assigned to workers' tasks, but above all, because of this overcrowding, they may face limited prospects for subsequent career development.[5] This situation would inevitably generate disillusionment and lack of commitment among young people.

If technical training becomes the norm, the devaluation of current specialised training for workers is likely to intensify. At a time when there is generally held to be a lack of skilled workers [Freyssinet 1992] and many employers are placing importance on the CAP and BEP, such a situation would be paradoxical, to say the least.

▮ *Vocational Education Attuned to the Diversity and Complementarity of Worker Skills*

Here, a whole range of jobs, from that of the skilled worker (or, in the case of the multifunctional profile, even the semi-skilled worker) to the technician or supervisor, is viewed as a continuum. There is an attempt to facilitate movement from one to the other and, in the case of technician and supervisor jobs, to allow double access through both internal mobility and external recruitment from different training levels.

This combination of profiles and co-operation among diversified manufacturing activities, both based on a continuum of jobs, would facilitate the flexible kinds of organisational structures that are needed to handle the instability of markets and products. This is also the solution most favourable to the cohesiveness of the work collective, insofar as it would avoid the split between the highly valued experience of the technician and that of the workers who are concretely responsible for production.

This second scenario presumes a greater commitment to continuing vocational training on the part of the firms, as well as greater appreciation of the worker's status. At present, however, the differential between worker and non-worker wages in France, as in Belgium, is 60 percent, as compared with 20 percent in West Germany and Denmark [CERC 1988].

Myriam Campinos-Dubernet

(Translation by Miriam Rosen)

[5] The difficulty of internal promotion for senior technicians is currently posing a severe problem in France, owing to the rapid increase in the number of initial training recipients at this level (Level III).

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